SAFEBACK | SMART AQUACULTURE | GUANGZHOU, CHINA

TK-FS2000 6-Hopper Pneumatic Fish Feeder

Machine stays on the bund · feed flies 30 m · 360° spreading over Ø30 m

Product datasheet (EN) · Rev. 2026-10 · Vietnam market



Fig. 1 TK-FS2000 — six HDPE hoppers on a stainless-steel frame, with digital control panel

1. Product overview

The TK-FS2000 is a high-capacity pneumatic (air-conveying) automatic fish feeder from the SAFEBACK smart-aquaculture range. Six independent hoppers feed a blower-driven conveying system: pellets travel through a 30 m feed hose and are thrown by a continuously rotating spreading head over a circle of about 30 m in diameter.

Because the machine works from the pond bund, nobody has to enter the water, push a boat or carry bags to the pond edge. A single filling of six bags gives roughly 160 kg of sinking feed or 100 kg of floating feed, and each 25 kg bag is discharged in about 8 minutes — enough for a full day of feeding on large grow-out ponds.

The feeder runs on a standard single-phase 220 V supply at about 2,000 W. That is the same 220 V / 50 Hz standard used on farms across Vietnam, so the unit connects to an existing supply without a three-phase upgrade. It is aimed at large-water intensive ponds, clusters of ponds fed from one

access road, and Mekong Delta pangasius and tilapia operations.

2. Key features

- **Feed stays on the bund** — 30 m pneumatic conveying: place the machine on the road, feed reaches the pond centre.
- **360° continuous spreading** — no dead corners; one position covers a circle of about 30 m diameter (≈700 m^2).
- **Six independent hoppers** — ≈160 kg of sinking feed or ≈100 kg of floating feed per filling, so one fill lasts most of a day.
- **Fast discharge** — about 8 minutes per 25 kg bag, roughly 180–190 kg per hour.
- **220 V single phase, ≈2,000 W** — runs on the farm's existing supply; no three-phase line, no generator.
- **Built for hot, humid farms** — stainless-steel frame and UV-stabilised HDPE hoppers resist tropical sun, rain and coastal air.
- **Digital control panel** — timed and manual feeding from one panel on the frame.
- **Complete on delivery** — 30 m feed hose supplied with the machine, so commissioning is a half-day job.

3. The TK family and model coding

Every SAFEBACK aquaculture product carries the **TK** prefix: **TK – category code + specification number**. The two-letter code identifies the category; the number carries the single most important figure for that product — rated power in watts for powered equipment, measured parameters ×100 for sensors, screen size ×100 for terminals. One coding rule across the range, so a customer can tell from the model number what a unit is and what class it belongs to.

Code	Category	Model	What the number means
GW	4G IoT gateway	**TK-4G-GW**	4G Cat.1 uplink (role-based code)
FS	Pneumatic (air-blower) feeder	**TK-FS2000**	Rated power 2000 W, 30 m conveying
—	Two-bag feeder	TK-150D	150 kg/h class; D = dual hopper
YL	Impeller aerator	TK-YL1500	Rated power 1500 W
YC	Waterwheel aerator (mains)	**TK-YC750SL**	Rated power 750 W, twin impeller
YC	Waterwheel aerator (mains)	**TK-YC1500SL**	Rated power 1500 W, four impellers
DO	Fluorescence DO sensor	TK-DO100	Single parameter
PH	pH sensor	TK-PH100	Single parameter
ORP	ORP sensor	TK-ORP100	Single parameter
MP	Multi-parameter probe	TK-MP500	Five parameters

The TK-FS2000 and the TK-150D are the two rungs of the feeder line: the FS2000 carries six hoppers, runs to a timer and reaches the middle of large ponds; the 150D carries two bags, loads by hand and throws feed directly. The feeder

handles feed, the aerator handles oxygen, and the probes with the terminal let you see both — one model code, one protocol, so you can buy in stages and add later without changing platform.

4. Technical specifications

Category	Item	Specification
Basic	Model	TK-FS2000
	Product type	6-hopper pneumatic automatic fish feeder
	Net weight	≈60 kg
	Overall dimensions	Confirmed by measurement after crating (factory data sheet with each unit)
	Hopper quantity	6 independent hoppers, all of equal volume
	Load per hopper	One bag of feed, up to 40 kg
Capacity	Hopper capacity, sinking feed	≈160 kg per full load (all six hoppers)
	Hopper capacity, floating feed	≈100 kg per full load (all six hoppers)
	Discharge rate	≈8 min per 25 kg bag
	Effective output	≈180–190 kg/h
Feeding	Spreading angle	360° continuous rotation
	Feeding zone	Ø ≈30 m (≈700 m^2) per position
	Pneumatic conveying distance	≈30 m
	Suitable feed	Sinking and floating pellets
Power	Rated power	≈2,000 W
	Power supply	220 V AC, 50/60 Hz, single phase; 110 V/60 Hz version available to order
	Blower speed control	Fixed speed, no variable-frequency drive
	Control	Digital panel, timed and manual feeding
	Remote control	Local panel control; phone/remote access requires an external 4G controller (TK-4G-GW)
Construction	Frame	Stainless steel
	Hoppers	HDPE, UV-stabilised
Delivery scope	Standard supply	Feeder, 30 m feed hose, operation manual
Service	Warranty	1 year on the whole machine, from the date of manufacture
	Wear parts	No spare-parts kit in the standard scope; a wear-parts kit is recommended

Values marked "≈" are nominal. Discharge rate is quoted for a 25 kg bag, the standard bag at most Vietnamese feed mills; a minority pack 40 kg, so the same tonnage simply takes fewer bags. All six hoppers are of equal volume and each holds one bag of up to 40 kg. Overall dimensions, protection class (IP), insulation class, no-load noise, hose bore, pellet size range and spreader speed are confirmed on the factory data sheet supplied with each unit.

5. How it works

1. **Load** — open the hopper lids and fill with pellets; six hoppers take ≈160 kg of sinking or ≈100 kg of floating feed.

2. **Meter** — the control panel releases feed from the hoppers at the set rate and time.
3. **Convey** — a ≈2,000 W fixed-speed blower pushes the pellets through the 30 m hose, so the machine can sit far from the water.
4. **Spread** — the rotating head throws the feed through 360°, building an even feeding circle of about 30 m diameter.

6. Installation and site requirements

- **Standing:** hard, level surface (concrete pad or compacted bund) able to carry the ≈60 kg machine plus feed.
- **Height:** place above the maximum flood level and keep the control panel out of standing water and direct rain.
- **Power:** dedicated 220 V circuit with a 30 mA RCD; cable cross-section per local electrical code.
- **Hose routing:** gentle bends only, no kinks, no vehicle traffic over the hose, and the run kept as short as the pond layout allows.
- **Clearance:** at least 1 m around the frame for servicing; the spreading head must discharge over open water.
- **Weather:** anchor the frame against wind and keep hopper lids closed so feed stays dry.

7. Feed types and target species

The feeder handles both extruded floating pellets and sinking pellets; the recommended pellet size range is given on the factory data sheet supplied with each unit. Target species in Vietnam and southern China:

- Pangasius / basa (*cá tra*), hybrid catfish
- Tilapia (*cá rô phi*), snakehead (*cá lóc*), climbing perch
- Grass carp, common carp and other freshwater polyculture species
- Mixed polyculture ponds and clusters of small ponds fed from one road

For shrimp ponds and very fine crumble feed, contact us for the recommended setting before ordering.

8. Model comparison

Item	TK-FS2000	TK-150D
Feeding method	Pneumatic conveying + 360° rotary spreading	Direct high-speed throwing, 110° fan
Hopper	6 hoppers of equal volume (each takes a 40 kg bag), ≈160 kg sinking / ≈100 kg floating	2-bag hopper, ≈80 kg sinking (≈3.2 bags) / ≈50 kg floating (2 bags)
Output	≈8 min per 25 kg bag — **≈180–190 kg/h**	≈15 bags/h of 25 kg — **≈300–375 kg/h**
Reach	30 m conveying, Ø30 m spread	8–17 m throw
Power	≈2,000 W, 220 V	200 W, 220 V
Weight	≈60 kg	≈20 kg, 57 × 57 × 85 cm
Best for	Large ponds and clustered ponds where the	Small and medium ponds with direct access to

Item	TK-FS2000	TK-150D
	machine has to stay on the access road	the water's edge

The 150D throws feed directly and therefore moves more tonnage per hour; the FS2000 spends its power on conveying 30 m and rotating 360°, so it is slower but reaches ponds where no machine can stand at the water edge. The two figures are not a misprint — they follow from the two designs.

9. Notes for regional markets

This unit is built for 220 V single-phase, 50 Hz. What differs between countries is not whether it fits, but three things: voltage level, frequency and certification — with 240 V single-phase in Malaysia and India, and 60 Hz in the Philippines, being the two that matter most. Check the table first, then read the note for your region.

Country / region	Single-phase	Three-phase	Frequency	Relation to this unit
Vietnam	220 V	380 V	50 Hz	Identical
Thailand	220 V	380 V	50 Hz	Identical
Indonesia	220 V	380 V	50 Hz	Identical
Cambodia	220 V	380 V	50 Hz	Identical
Bangladesh	220 V	380 V	50 Hz	Identical
Mongolia	220 V	380 V	50 Hz	Identical
Myanmar	230 V	400 V	50 Hz	+5%
Singapore	230 V	400 V	50 Hz	+5%
Malaysia	240 V	415 V	50 Hz	+9%
India	230 V	400 / 415 V	50 Hz	+5–9%
Philippines	220 V	380 / 480 V	60 Hz	Frequency differs

9.1 Fully compatible — 380 V / 50 Hz

- **Vietnam, Thailand, Indonesia, Cambodia, Bangladesh, Mongolia** — These six markets use the same low-voltage system as China: 380 V three-phase, 220 V phase-to-neutral, 50 Hz. The machine connects directly — no transformer, no re-wound motor. This is where the TK series is easiest to sell against European or American equipment.
- **Vietnam is the reference market** — 0.4 kV three-phase four-wire, 380 V between phases, 220 V phase-to-neutral, 50 Hz — the same as China. Small ponds in the south often have only a single-phase 220 V service, or three-phase with too little capacity; tell us the service type, transformer rating and existing load before ordering. If a single-phase machine is required, specify the D configuration.
- **Phase loss and voltage sag** — Voltage sag at the end of a rural feeder, and phase loss, are the number-one cause of burnt motors — not the voltage level. Fit a phase-failure overload relay per machine; if you run demand-based aeration (C configuration), the control board already

provides that protection.

9.2 Wide-range coverage — 400 to 528 V / 50 Hz

- **Malaysia 415 V, India 400–415 V, Singapore 400 V, the Philippines 480 V — no transformer needed** — These voltages look higher than 380 V, but they are not a problem for our machines: the control supply is a 90–528 VAC wide-range input. Single-phase 220 V, 380 V phase-to-phase, 440 / 480 V — all accepted, and 100–745 VDC as well. No step-down transformer, no country-specific model. One machine covers Southeast Asia.
- **CE covers 100–400 VAC only — say so plainly** — Operation between 480 and 528 VAC is fine, but it sits outside the CE certification range. Quote within 400 VAC for tenders and certification files; where 480 V is genuinely used, state it in the technical deviation sheet rather than glossing over it — this is exactly what a customer's acceptance engineer will check.
- **The motor side still deserves a glance** — A wide-range control supply does not make the motor wide-range. A 380 V three-phase motor on a 415 V supply sees +9.2%, which is inside the ±10% window of IEC 60034-1 and will run; but in hot, humid pond-side enclosures the thermal margin is thin, so for continuous full-load duty confirm the actual voltage once, or take one frame size up. Same logic for 240 V single-phase in Malaysia.

9.3 Different frequency — the Philippines at 60 Hz

- **A 50 Hz motor must not be connected to a 60 Hz supply** — The Philippines runs 220 V / 60 Hz nationwide, with 380 V or 480 V three-phase for industry. On 60 Hz a 50 Hz motor turns 20% faster; for impeller and fan loads shaft power rises with the square to cube of speed, so the demand reaches 1.4–1.7 times rated power — this is not 'a bit faster', it is guaranteed overload.
- **Three ways out — decide before ordering** — ① Order a 60 Hz motor; cleanest. ② Run a VFD with the frequency clamped to 50 Hz, at the cost of about 17% of output. ③ Size up one frame and run it at 60 Hz. This has to be settled at the order stage; it cannot be fixed in the field.
- **Confirm the three-phase voltage as well** — Both 380 V and 480 V three-phase exist in the Philippines — legacy US-era projects are usually 480 V, local distribution usually 380 V. Ask the customer to photograph the panel nameplate before ordering.

9.4 Running cost at local tariffs

- **A feeder runs intermittently — do not cost it as continuous** — Three or four feeds a day of 40–60 minutes each means 2.5–3 hours of actual running. A 2.0 kW unit uses 5–6 kWh a day, about 1,600 kWh a year at 300 days.
- **Annual cost at local tariffs (2025 public data, tax included)** — Vietnam about USD 125–150; Thailand 200; Indonesia 125–140; the Philippines 180–215; Malaysia 160–225.
- **The blower is where the money goes** — The dosing motor is only 200 W; almost all

consumption is the blower. A VFD matched to pipe length saves 30% or more on short throws.

9.5 Climate and corrosion

- **Hot and humid** — Southern Vietnam, central Thailand, the Philippines, Indonesia, Malaysia: hopper and enclosure need moisture control, desiccant inside the box; bring the machine under cover or lash it down before typhoon season.
- **Brackish and salt water** — Ca Mau, Bac Lieu, Soc Trang, Ben Tre, southern Thailand, coastal Indonesia: salt spray attacks the spreader, bolts and terminals. Clean and touch up quarterly, apply anti-oxidation grease to terminals; tell us in advance for long-term high-salinity sites.
- **Monsoon flooding** — India, Bangladesh, Myanmar: raise the machine base by at least 30 cm, keep cable joints on the bank.

9.6 Certification and documents

- **Mandatory certification differs by country** — Vietnam CR (QCVN 4:2009/BKHCN for low-voltage equipment), Thailand TISI, Indonesia SNI, the Philippines BPS/PS or ICC, Malaysia SIRIM / ST, India BIS. Most schemes are mandatory only for certain power ranges — confirm against the local customs requirement.
- **CE and IEC reports are the passport** — Beyond the local schemes, a CE declaration and IEC test reports are the two documents customers ask for most, tenders in particular. Ask before ordering and we ship them with the goods.
- **Language of the documents** — Standard documentation is bilingual Chinese/English. Vietnamese, Thai, Indonesian or Tagalog manuals and nameplates must be requested in advance — they are typeset separately, priced separately, and extend the lead time.

9.7 Five questions before ordering

① Is the pond service three-phase or single-phase? What is the transformer rating?

② What is the measured voltage on site? — the actual reading, not the nominal figure.

③ Is the frequency 50 Hz or 60 Hz? — the Philippines must be confirmed separately.

④ Is the water fresh, brackish or salt? Roughly what salinity?

⑤ Which language do you need for the manual and the nameplate?

This table is a general judgement. Province-level differences — a rural feeder that sits low all year, an extra clearance step at a particular port, a local subsidy scheme — should be added by the local sales team to the project file. For a country not listed here, judge by the same three dimensions: voltage, frequency, certification; if in doubt, ask the factory.

10. Frequently asked questions

Does it need three-phase power? No. The unit runs on single-phase 220 V at about 2,000 W.

Can it feed floating pellets? Yes. Floating feed loads to about 100 kg because of its lower bulk

density.

How much pond does one machine cover? One position feeds a circle of about 30 m diameter, roughly 700 m^2. On larger ponds, reposition the machine or use several units.

Can one machine feed two ponds? Yes, if the machine is sited so that the 30 m spreading circle falls inside the ponds.

Will it run unattended? Yes — the digital panel runs timed feeding cycles, so the machine can feed at set times without an operator. For a feeder that must be loaded bag by bag, see the TK-150D.

Is it hard to install? No. The 30 m hose comes with the machine; a two-person team normally commissions it in half a day.

What maintenance does it need? Keep the hose free of kinks, wipe the panel, and check the spreading head and hopper seals each season.

Can it be monitored remotely? The panel itself only provides local timed and manual control. For phone-based start/stop and feeding logs, add an external SAFEBACK 4G controller (TK-4G-GW) and connect to the cloud platform, where feed and DO data are managed together.

11. Packing, delivery and commercial terms

- **Packing:** export packing; carton or crate agreed with the order. Overall dimensions, packing dimensions and gross weight are confirmed by measurement after crating, and a packing list is supplied with each shipment.
- **Container loading:** 20GP / 40HQ quantities are calculated from the final packing dimensions; our loading plan is confirmed before the order.
- **Loading port:** Nansha / Yantian, China.
- **Lead time:** confirmed at order; stock availability quoted on request.
- **Warranty:** 1 year on the whole machine from the date of manufacture. No wear-parts kit is included as standard; we recommend ordering one with the first shipment to avoid downtime waiting for parts.
- **Voltage versions:** 220 V/50 Hz as standard; 220 V/60 Hz and 110 V/60 Hz versions can be built to order for other export markets (please state on the order confirmation).

12. Contact

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Specifications are subject to change without notice as the product is improved; confirm current data before tendering or volume orders.